Brussels Studies
La revue scientifique pour les recherches sur Bruxelles / Het wetenschappelijk tijdschrift voor onderzoek over Brussel / The Journal of Research on Brussels
Fact Sheets | 2021

Intra-urban contrasts regarding fertility in Brussels

Contrastes intra-urbains de la fécondité bruxelloise

Intrastedelijke contrasten qua vruchtbaarheid in Brussel

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Electronic version
URL: http://journals.openedition.org/brussels/5302
DOI: 10.4000/brussels.5302
ISSN: 2031-0293

Publisher
Université Saint-Louis Bruxelles

Electronic reference
Mathieu Buelens, "Intra-urban contrasts regarding fertility in Brussels", *Brussels Studies* [Online], Fact Sheets, no 152, Online since 24 January 2021, connection on 09 February 2021. URL: http://journals.openedition.org/brussels/5302 ; DOI: https://doi.org/10.4000/brussels.5302

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Introduction

1 Like many demographic patterns, fertility varies according to social group and area. In general, these variations are analysed separately, in spatial frameworks which are not very detailed (the state for social contrasts; the provinces or municipalities for spatial contrasts). The summarised results presented in this fact sheet go beyond these two limits, examining both the social and spatial variations in fertility within the Brussels urban area. They are the result of a study on recent trends in fertility intensity (the number of children born) and timing (the age of the mother when she gives birth) across Europe.

1. Socio-economic determinants of fertility

2 Among the individual determinants of fertility, it is mainly the socio-economic factors which are examined in the demographic literature. It is therefore accepted – at least in western Europe – that one of the reasons for the current low fertility is the cost of parenthood. For parents (and mainly mothers), the time needed to raise children results in a decrease in individual freedom, a loss of salary and career opportunities and thus a lower return on the investment associated with their own education. Thus, the educated populations, for whom parenthood has a higher opportunity cost, tend to have fewer children and plan a late transition to parenthood [Gustafsson, 2001; Jones *et al.*, 2010; Van Bavel, 2010].

3 These individual relationships are found in the population of the two main Belgian urban areas (Brussels and Antwerp) (Figures 1a, 1b and 1c) [1]. In terms of intensity (Figure 1a), the number of children among women aged 40 to 50 from the first six income deciles (the poorest) have more children than the average (1,57 children per woman), unlike women in the last four deciles.. Women in deciles three and four give birth to the most children, although on average the number of their offspring remains well below the generational renewal level of 2,1. One-fifth of women over 40 have three or more children. Among them, the first four income deciles are over-represented, in contrast to the last four (Figure 1b). In more well-to-do households, the proportion of women without children increases with income. Fertility thus declines to reach very low levels as income rises. Only women in the highest income decile are exceptions to this rule: even though 32 % of them are childless, they are more likely to have three or more children than women in deciles eight and nine[2]. It should be noted, however, that it is most common for women to have two children (nearly 40 % of women), regardless of income class.

Figure 1a. Childbearing patterns across income groups

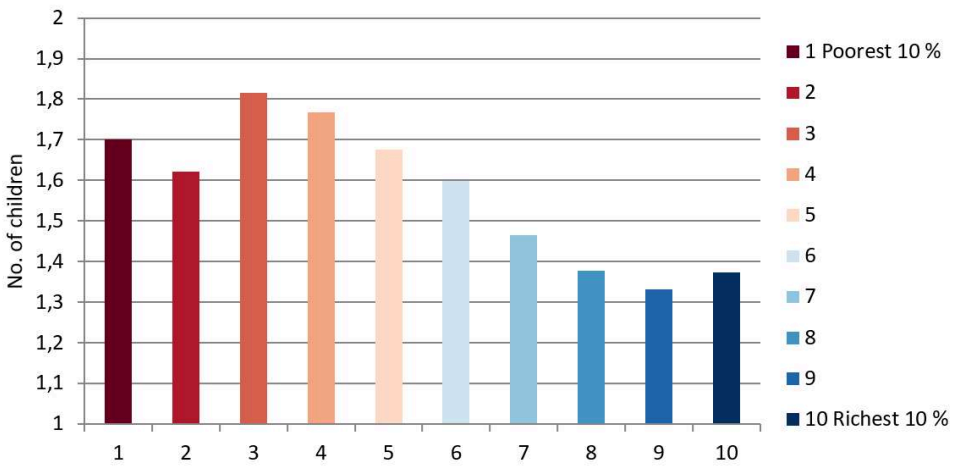


Figure 1b. Childbearing patterns across income groups

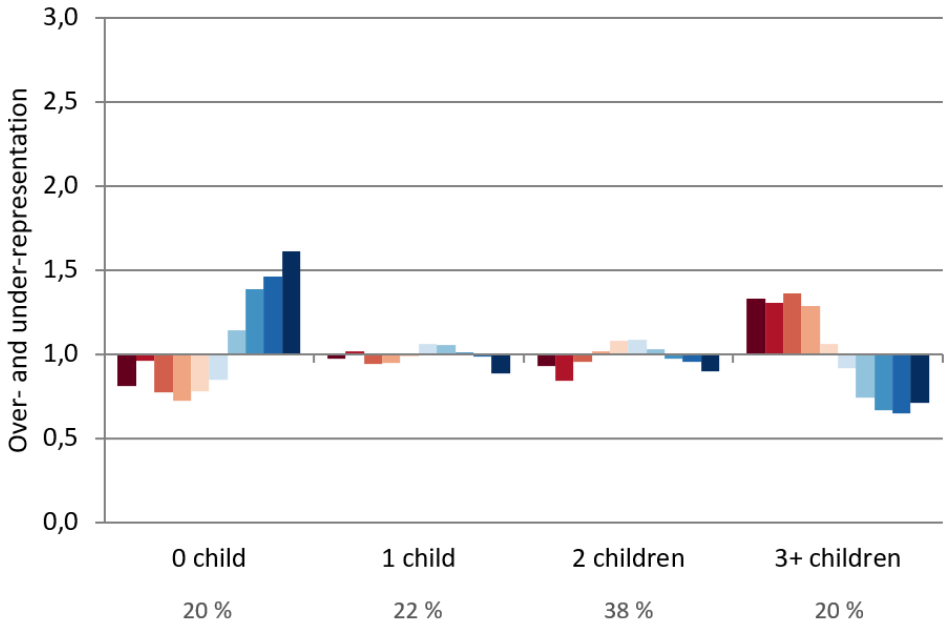
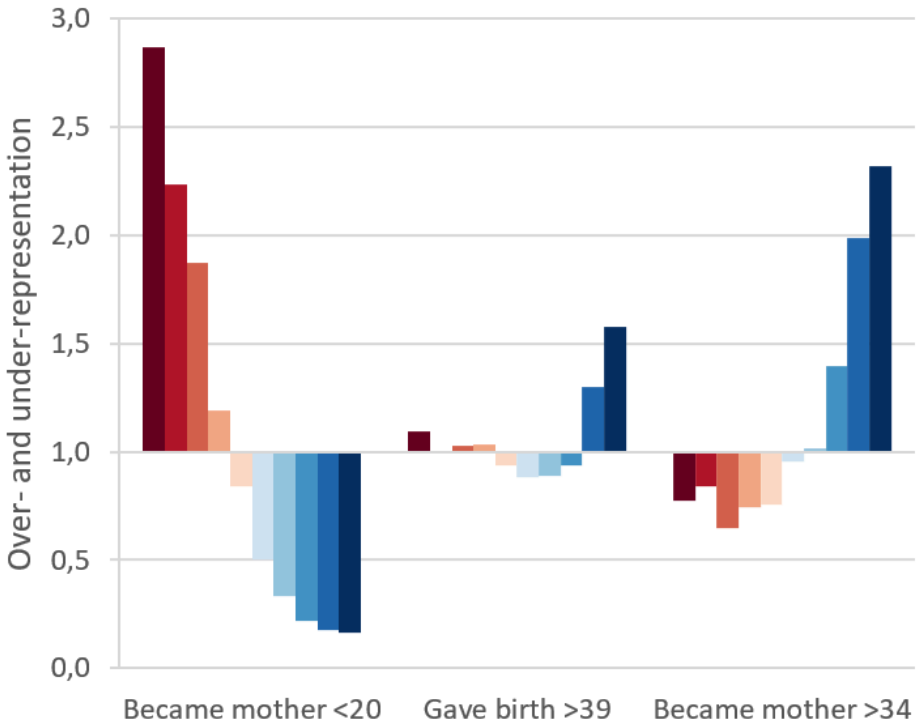


Figure 1c. Childbearing patterns across income groups



Source: BCSS, 2010; own calculation

4 Social contrasts are more pronounced in terms of the timing of fertility, especially with regard to early fertility (Figure 1c). Thus, among women who have had a child before the age of 20, those from the poorest households are clearly over-represented: they are up to 2,9 times more numerous than in the general population of the study area. As a result, 82 % of women who have had a child before the age of 20 now live in a household

with an income below the median. On the contrary, the highest income groups are very under-represented among women who have given birth at an early age: the last three deciles account for only 3 % of them.

5 The social profile of late fertility is less pronounced. The middle income groups are slightly under-represented among women who have had a child (all birth ranks combined) in their forties, while the lowest and (especially) highest incomes are over-represented (up to 1,6 times). In more than nine out of ten cases, these are women who already had a child earlier in their life. There are few first births after the age of 39. Social variations are more pronounced for late first births. Among women who have had their first child after age 34, the distribution across income groups is roughly the reverse of that observed for young mothers, with an under-representation of households with incomes below the median and an over-representation of the highest income deciles (Figure 1c).

6 Analyses of the same study area using socio-economic factors other than income, such as education or employment, are also in keeping with the international literature on the link between fertility and social groups.

2. Spatial organisation of contrasting fertility profiles

7 The geography of social groups influences the geography of fertility patterns; this applies to the urban area of Brussels as well, which is the subject of this section. A fine spatial analysis of fertility rates according to age group (number of children born to a mother of a specific age divided by the female population of that age) at the level of statistical sectors and using Ward's bottom-up classification method, makes it possible to distinguish the area studied according to five contrasting fertility profiles.

8 The data used for this classification come from the national register, the BCSS and the DGSIE and relate to the period between 2006 and 2011. The volatility induced by small numbers (fine spatial division, rare events and low population in some age groups) made it necessary to use a multi-year average (from 2006 to 2011) and to merge sparsely populated statistical sectors.

Figure 2. Geography of fertility patterns in Brussels

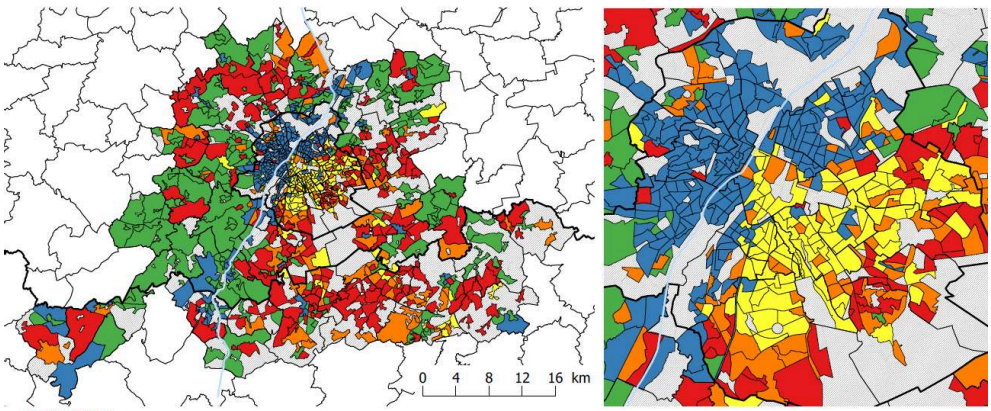
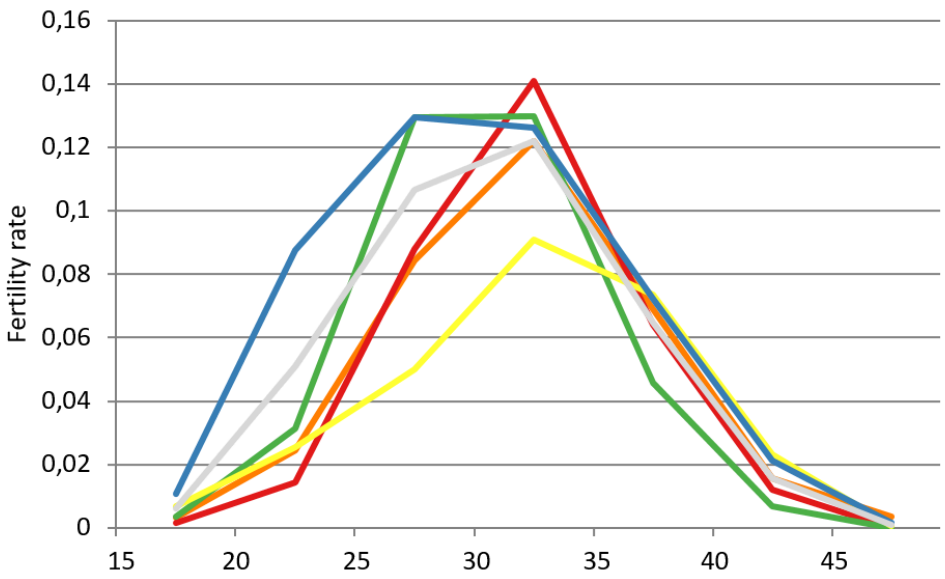


Table 1. Fertility profiles

	Total fertility rate	Mean age at childbearing	Proportion of fertility due to the most fertile age group	Prop. of women concerned
High fertility	2,25	30,1	29 %*	39 %
Women who have been childless for a long time	1,35	32,5	34 %	14 %
Fertility within the norm	1,73	30,4	37 %	23 %
Low fertility mostly due to the 30-34 age group	1,61	32	44 %	13 %
Low fertility	1,61	32	38 %	11 %
Average	1,84	30,8	33 %	

* Here the most fertile age group is the 25-29, not the 30-34.

Figure 3. Distribution of fertility across age groups



Source: National register and BCSS, 2006-2010; own calculation

2.1 High fertility

9 The high fertility profile concerns almost 40 % of the female population of childbearing age. It is characterised by a high dispersion of fertility around the mean age (Figure 3: the blue curve does not show a peak) and high fertility, especially with respect to the urban average (larger area under the curve). Fertility rates according to five-year age groups are all above the averages for the urban area. In fact, they are the highest in the area for the groups under 30 years. It is especially the 20-29 year olds who are responsible for high fertility. The total fertility rate (TFR) – which measures the number of children each woman would give birth to if age-specific fertility rates remained unchanged throughout her reproductive life – is 2,25, which clearly distinguishes this profile from the other four. The fertility profile here is roughly symmetrical around the age of 30. The areas concerned (in blue on the maps) correspond to the north and west of the Brussels Region, from Evere to Forest. Outside the Region, this profile is also found in the municipalities along the canal, notably in Vilvoorde, Drogenbos, Halle and Tubize.

2.2 Women who are childless for a long time

10 These first areas differ from those (in yellow) where fertility is low and late. The TFR is only 1,35 children per woman, while the average childbearing age (all birth ranks combined) is over 32,5 (compared with an average of 29,6 in Belgium). This profile stands out in particular due to the very low fertility of women between the ages of 20 and 34. Relative over-fertility after age 35 is not sufficient to make up for the low fertility at an early age, which explains why the TFR remains well below the Belgian average of 1,81. These areas correspond roughly to the city centre (pentagon) and the southeast inner ring of the Brussels region (Ixelles, Etterbeek, the upper part of Saint-Gilles and the most central parts of Uccle and both Woluwes). Outside the Brussels Region, such profiles are mainly found in Louvain-la-Neuve and certain neighbourhoods of Waterloo.

2.3 Fertility within the norm

11 A third profile is also characterised by relative symmetry around the age of 30, but this time with a very low dispersion of fertility rates around the mean childbearing age. Three-quarters of births concern women between the ages of 25 and 35 (compared with about 55 % for the first two types). The low fertility before the age of 25 and after 35 is almost compensated by high fertility in the 25-34 age group. The TFR is therefore only slightly below the Belgian average, at 1,73. These areas (green on the map) are almost exclusively located on the outskirts.

2.4 Low fertility (due to 30-34 year olds)

12 The last two profiles are characterised by lower fertility (TFR around 1,61), but with a later modal rate as it concerns the 30-35 age group. This pattern is also more pronounced in the red areas (44 % of births attributable to 30-35 year olds). In the orange areas, older women continue to have higher fertility rates than the average for the study area. These areas are also located on the outskirts, but are more concentrated

to the south of Brussels (within and outside BCR), but also to the northwest in Ganshoren and Jette (orange), Wemmel and Meise (red).

2.5 A geography pointing to major intra-urban socio-spatial contrasts

13 The spatial distribution of these profiles points to the equally contrasting social compositions within the Brussels urban area [Vandermotten *et al.*, 2016; Van Hamme *et al.*, 2016]. Table 2 shows the value of the main indicators characterising the population of the areas identified above (the orange and red low fertility profiles have been grouped here). In areas of higher fertility, blue-collar workers are over-represented among the employed and the median income per declaration is low. The areas where women are childless for a long time (yellow) are those characterised by a high proportion of young adults and a fairly international and educated population. In the suburbs, where fertility is concentrated around the age of 25-34, the majority of residents are Belgians and most households are made up of married couples. Median incomes are higher there, especially in areas where fertility depends mainly on the 30-34 age group.

Table 2. Population characteristics according to fertility profile

	Median income index	Blue-collar workers	Moderate and high level of education	Born in Belgium	20-35 years old	In a married relationship
High fertility	0,82	38,6 %	23,5 %	65,6 %	21,7 %	53,6 %
Women who are childless for a long time	0,95	18,3 %	48,7 %	57,0 %	27,1 %	42,1 %
Fertility within the norm	1,09	24,3 %	30,0 %	89,2 %	16,8 %	62,9 %
Low fertility	1,11	16,0 %	42,8 %	77,9 %	16,9 %	59,4 %
Average for the study area	1,00	24,8 %	34,9 %	74,2 %	19,4 %	56,5 %

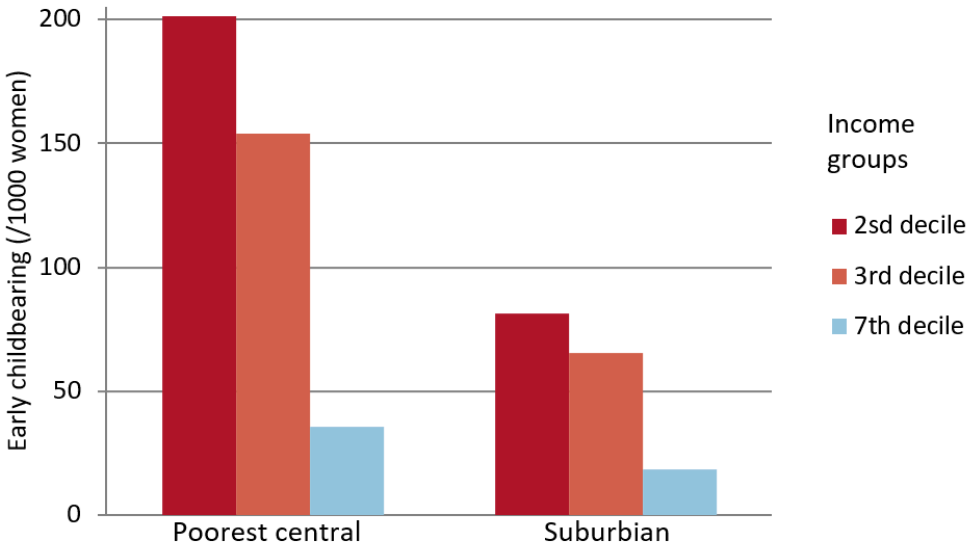
Source: BCSS, Census 2011

3. The influence of contextual variables on the geography of fertility patterns

14 Spatial variations in age-specific fertility profiles are partly the result of a compositional effect, i.e. the varying proportion of each social group in different neighbourhoods. They also depend on what is commonly referred to as a context effect, i.e. variations in fertility rates within the same social group in different parts of the

city. For example, with the same income level and national origin, the fertility rate before the age of 20 is up to 2,5 times higher among women living in disadvantaged central neighbourhoods such as the "poor crescent" of Brussels than among those living in the suburbs (Figure 4). Such a contextual effect could result from differences in access to housing (type, price and tenure status) [Clark, 2012; Kulu and Boyle, 2009], internal migration (including post-birth migration) [Kulu, 2005] or local social norms [Arai, 2007], whose respective influences could not be characterised in this research.

Figure 4. Prevalence of early childbearing among Belgian women in different residential contexts in Brussels and Antwerp regions



Source: BCSS, 2010; own calculation

The spatial definition of these two areas is based on a simplification of the areas used by Wertz [2018].

4. Contrasting intra-urban fertility in Brussels as in other European metropolises

15 The above results attest to the existence of very diverse reproductive patterns in the Brussels population. Among other things, they confirm a higher fertility among the lower socio-economic classes, which nevertheless remains below the replacement-level. This is all the more true as the average number of children per woman temporarily increased during the period covered by this study (2006-2010), in Belgium as in the whole of northwestern Europe. Since then, fertility has declined during the decade after 2010, following a marked reduction in fertility before age 30 without a full transfer of births to later ages. This short note also shows that the timing of fertility varies greatly among social groups. The contrasts in timing are more marked than those regarding fertility intensity.

16 The socio-spatial variations in fertility observed in the urban area of Brussels are confirmed by a similar analysis of the urban area of Antwerp. There, fertility is also low and late in the city centre. It is higher in every age group and especially among the 20-25 year olds in the rest of the municipality of Antwerp, as well as in the

municipalities formerly marked by industrial activity along the Rupel. Finally, fertility intensity is more dependent on average age groups (25-34) in peri-urban areas, and slightly higher age groups in the more affluent suburban areas.

17 More generally, the large urban centres throughout Europe are characterised by low fertility, despite relatively high rates among women over 35. An appropriate spatial division makes it possible to distinguish higher fertility which is much more dependent on the 30-35 age group on the outskirts of cities of comparable size to Brussels (Scandinavian capitals, Amsterdam, Vienna, large French and German cities). Finally, at the intra-urban level, the disadvantaged neighbourhoods of large cities (London, Paris, Lyon, Marseille, etc.) are characterised – as in Brussels – by higher fertility rates than the national average for each age group, as well as by a strong dispersion of fertility around the average childbearing age [Buelens, 2019].

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NOTES

1. Only a sample of women born in Belgium or whose first nationality is Belgian with at least one parent born in Belgium is considered here (individual data from the BCSS).
2. This difference is even more pronounced when we consider the number of children at the end of the childbearing years (after age 50). Women with the highest incomes are more likely than others to have a child (or another child) after the age of 40.

ABSTRACTS

Few studies consider fertility variations on a detailed spatial scale. By considering both the intensity (the number of children born) and the timing of fertility (the age of the mother when she gives birth), the analysis presented here provides an overview of reproductive trends in Brussels. As individual factors such as income level influence fertility patterns, the geography of these patterns points to major intra-urban socio-spatial contrasts, and also tends to show the influence of contextual factors which remain to be studied.

Peu d'études considèrent les variations de la fécondité à une échelle spatiale détaillée. En considérant à la fois l'intensité (nombre d'enfants mis au monde) et le calendrier de la fécondité (l'âge de la mère à la naissance), l'analyse présentée ici dresse un panorama des pratiques reproductives à Bruxelles. Puisque les facteurs individuels tels que le niveau de revenu influencent les comportements féconds, la géographie des profils de fécondité rappelle les grands contrastes socio-spatiaux intra-urbains, mais tend également à montrer l'influence de facteurs contextuels qui restent toutefois à étudier.

Er zijn maar weinig studies die de verschillen qua vruchtbaarheid onderzoeken op gedetailleerde ruimtelijke schaal. Deze analyse biedt een overzicht van de voortplantingspraktijken in Brussel, waarbij rekening wordt gehouden met zowel de intensiteit (aantal borelingen) als de timing (leeftijd van de moeder bij de geboorte) van de vruchtbaarheid. Aangezien individuele factoren zoals het inkomensniveau een impact hebben op het voortplantingsgedrag, blijkt uit de geografie van de vruchtbaarheidsprofielen nogmaals dat er grote intrastedelijke sociaal-ruimtelijke contrasten zijn, maar ook dat er contextuele factoren lijken mee te spelen die echter nog moeten worden onderzocht.

INDEX

Subjects: 3. démographie – immigration – société multiculturelle
Trefwoorden demografische boom, sociale ongelijkheden
Mots-clés: boom démographique, inégalités sociales
Keywords: demographic boom, social inequalities

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